



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/660,447 | 09/11/2003 | Stephen L. Martin | B0630.70034US00 | 4905 |

7590

11/03/2005

Peter A. Nieves
HAYES SOLOWAY, P.C.
175 Canal Street
Manchester, NH 03101

| |
|----------|
| EXAMINER |
|----------|

MEI, XU

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2644

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|---------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/660,447 | MARTIN ET AL. | |
| | Examiner | Art Unit | |
| | Xu Mei | 2644 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 56-59 is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-16, 18-33, 35-37 and 39-54 is/are rejected.
- 7) ☒ Claim(s) 8, 17, 34, 38 and 55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>06/13/05</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2644

DETAILED ACTION

1. This communication is responsive to the applicant's amendment dated 07/05/2005.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 9-11, 13, 41-44, 47-48, 6, 46 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Hori et al (US-5,550,925, hereafter, Hori).

Regarding claims 1-4, 9-11, 13, 41-44, 47-48 and 50, Hori discloses the claimed audio signal processor and method (see Figs. 1, 8 and 12). BPF 5 is used for separating a low-frequency component (i.e., a low pass filter, col. 6, lines 17-20 and col. 7, lines 50-53). The detecting circuit 7 is used to detect a signal level or amplitude or peak from the input signal (Fig. 1, per claim 41) and in the output signal (Figs. 8 and 12, per claim 1). And a magnitude of the control signal (signal

Art Unit: 2644

used to control variable filter 2) is a function of the amplitude of the input or output signal within the selected low frequency band. And amplifier 3 is used to amplifying a bass frequency band of the input signal in response to the detected signal level. The fix cutoff frequency for the variable filter is shown in Fig. 2. The detected input signal level is a non-linear level.

For what's called for in claims 6 and 46, see col. 8, lines 23-40 for example.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori.

Regarding claims 5 and 45, Hori discloses the audio processor as discussed in claims 4 and 44 above. What does Hori

Art Unit: 2644

not show is the specific parameters of the attacking time and decay time, specific cutoff frequency as claimed. Hori discloses a time constant circuit for setting an attack recovery time (i.e., attacking time and decay time, see col. 6, lines 24-28) and the cutoff frequency for the audio processor as claimed. It would have been obvious to one of ordinary skilled in the art to design or arrange or use specific circuitry components for the time constant circuit of Hori in order to achieve specific desired time attack and decay parameters, and specific cutoff frequency for the variable filter.

6. Claims 24-25, 27, 29-31, 33, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Williamson, III (US-5,371,803).

Regarding claims 24-25, 29-31 and 33, Hori discloses the claimed audio signal processor (see Fig. 8). BPF 5 is used for extracts a low-frequency component from the output signal (i.e., a low pass filter, col. 7, lines 47-57) to generate a control signal with a magnitude of the control signal is a function of an amplitude of the output signal within the selected band. The variable filter as shown by Fig. 8 including a gain element (i.e., amplifier 3) to amplify the bass frequency band of the input signal outputted from variable filter 2.

Art Unit: 2644

What does Hori not teach is the gain element is a variable gain element responsive to the control signal.

Variable gain control element or circuit is old and well known in audio art used for providing adaptive amplification control by having specific control signal for an audio circuit in order to provide stabilized and balanced signal output. Williamson discloses a variable gain control circuit (Fig. 1, 25) including a variable gain element that is provided an improved attenuator with faster attack and release times (col. 4, lines 38-40) and with adaptive gain control according specific input control signal. It would have been obvious to one of ordinary skill in the art to modify the amplifier of Hori with an old and well known variable gain control circuit control by the control signal, as shown by Williamson, in order to provide an adaptive amplification control audio circuit with improved stabilized and balanced signal output.

For what's called for in claim 27, see col. 8, lines 23-40 for example.

Regarding claims 26 and 28, Hori discloses the audio processor as discussed in claims 24-25 above. What do Hori not shown are the specific parameters of the attacking time and decay time, specific cutoff frequency as claimed. Hori discloses a time constant circuit for setting an attack recovery

Art Unit: 2644

time (i.e., attacking time and decay time, see col. 6, lines 24-28) and the cutoff frequency for the audio processor as claimed. It would have been obvious to one of ordinary skill in the art to design or arrange or use specific circuitry components for the time constant circuit of Hori in order to achieve specific desired time attack and decay parameters, and specific cutoff frequency for the variable filter.

7. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Waller, Jr. (US-4,696,044, hereafter, Waller).

Regarding claims 22-23, Hori discloses the audio processor as discussed in claim 1 above. What does Hori not shown is the specific circuit connection as claimed for the variable filter. Waller discloses an audio processor including a variable control filter (VCF) including specific circuitry components as claimed (see Fig. 2). It would have been obvious to one of ordinary skill in the art to utilize the variable control filter with specific circuitry components as shown by Waller for the variable filter of Hori since both variable filters are basically the same type of variable filter for audio signal processing.

Art Unit: 2644

8. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Williamson, III (US-5,371,803) as applied to claim 24 above, further in view of Waller, Jr. (US-4,696,044, hereafter, Waller).

Regarding claims 39-40, the combinations of Hori and Williamson disclose the audio processor as discussed in claim 24 above. What does Hori and Williamson not shown is the specific circuit connection as claimed for the variable filter. Waller discloses an audio processor including a variable control filter (VCF) including specific circuitry components as claimed (see Fig. 2). It would have been obvious to one of ordinary skill in the art to utilize the variable control filter with specific circuitry components as shown by Waller for the variable filter of Hori and Williamson since both variable filters are basically the same type of variable filter for audio signal processing.

9. Claims 12 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Kimura (US-5,172,358).

Regarding claims 12 and 49, Hori discloses the audio processor as discussed in claims 1 and 41 above. What does Hori not show is the audio processor including bass frequency control to limit the Fletcher-Munson effect. It is old and well known in the audio art to utilize Fletcher-Munson curve as a basic

Art Unit: 2644

standard for designing and controlling audio processing device to match with human hearing. Kimura discloses a loudness control circuit for an audio device including low or bass frequency boosting according to the Fletcher-Munson curve (see Fig. 1 and 6). It would have been obvious to one of ordinary skill in the art to modify the audio processor of Hori with the old and well known Fletcher-Munson curve as standard guideline for control bass audio frequencies to limit the Fletcher-Munson effect as shown by Kimura in order to improve low frequency response of the audio processor.

10. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Williamson, III (US-5,371,803) as applied to claim 24 above, further in view Kimura (US-5,172,358).

Regarding claim 32, the combinations of Hori and Williamson disclose the audio processor as discussed in claim 24 above. What do Hori and Williamson not show is the audio processor including bass frequency control to limit the Fletcher-Munson effect. It is old and well known in the audio art to utilize Fletcher-Munson curve as a basic standard for designing and controlling audio processing device to match with human hearing. Kimura discloses a loudness control circuit for an audio device

Art Unit: 2644

including low or bass frequency boosting according to the Fletcher-Munson curve (see Fig. 1 and 6). It would have been obvious to one of ordinary skill in the art to modify the audio processor of Hori and Williamson with the old and well known Fletcher-Munson curve as standard guideline for control bass audio frequencies to limit the Fletcher-Munson effect as shown by Kimura in order to improve low frequency response of the audio processor.

11. Claims 14-16, 18-21 and 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Sauvagerd.

Regarding claims 14-16, 18-21 and 51-54, Hori discloses the audio processor as discussed in claims 1 and 41 above. What does Hori not show is the audio processor with the variable filter that comprises digital filter and signals being processes in digital environment as claimed.

Sauvagerd discloses the digital audio signal processor as discussed above. And since digital signal processing is old and well is very well known in the art at the time the invention was made, it would have been obvious to one skilled in the art at the time the invention was made to be motivated to modify the audio processor of Hori by utilize digital signal processing as

Art Unit: 2644

shown by Sauvagerd, in order to provide more compatible, flexible and durable audio processor in today's digital environment.

12. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Williamson, III (US-5,371,803) as applied to claim 24 above, further in view Sauvagerd.

Regarding claims 35-37, the combinations of Hori and Williamson discloses the audio processor as discussed in claims 24 above. What do Hori and Williamson not show is the audio processor with the variable filter that comprises digital filter and signals being processes in digital environment as claimed.

Sauvagerd discloses the digital audio signal processor as discussed above. And since digital signal processing is old and well is very well known in the art at the time the invention was made, it would have been obvious to one skilled in the art at the time the invention was made to be motivated to modify the audio processor of Hori and Williamson by utilize digital signal processing as shown by Sauvagerd, in order to provide more compatible, flexible and durable audio processor in today's digital environment.

Art Unit: 2644

13. Claims 8, 17, 34, 38 and 55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. Claims 56-59 are allowable over prior art of record.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

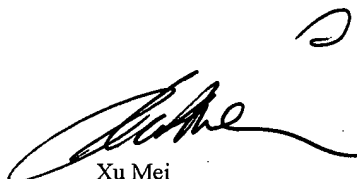
Art Unit: 2644

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 571-272-7523. The examiner can normally be reached on Monday-Friday (9:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Xu Mei
Primary Examiner
Art Unit 2644
10/24/2005